

Remarks

In view of the above amendments and the following remarks, reconsideration of the rejections and further examination are requested.

Claims 1 and 5-7 have been rejected under 35 U.S.C. §102(b) as being anticipated by Yamagata (US 5,951,833). Claims 1 and 5 have been rejected under 35 U.S.C. §102(b) as being unpatentable over Kinoshita (US 5,534,073). Claims 6-8 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kinoshita in view of Watanabe (US 6,164,133).

Claim 1 has been amended so as to further distinguish the present invention from the references relied upon in the above-mentioned rejections. Further, new claims 14-24 have been added.

It is submitted that the rejections are inapplicable to the claims for the following reasons.

Claim 1 is patentable over Yamagata and Kinoshita, since claim 1 recites a holding unit for holding a substrate, the holding unit including a holder plate and a vacuum suction member, the holder plate, the vacuum suction member and the substrate defining a space which can be purged by blowing N₂ gas thereinto so that etchant is prohibited from entering into the space during processing of the substrate, wherein the holder plate has a purging aperture for blowing the N₂ gas into the space, the purging aperture being connected to a N₂ source by a tube located in a cylindrical rotary shaft mounted to the holder plate. Both Yamagata and Kinoshita fail to disclose or suggest the holder plate having the purging aperture as recited in claim 1.

Yamagata discloses an anodizing apparatus including a holder 102 for holding a substrate 101. The holder 102 has an opening 103 in a central region thereof. A pair of concentric O-rings 104 is recessed into a surface of the holder 102 facing the substrate 101. A hole is located in the surface of the holder 102 facing the substrate 101 between the O-rings 104. The hole is connected to a pump via a pressure reducing line 105 and creates a vacuum between the substrate 101 and the holder 102 to hold the substrate 101 thereto. (See column 10, line 54 - column 11, line 19 and Figure 1).

In the rejection, it is indicated that the limitation related to the purging aperture has been given little weight. However, claim 1 now recites that the holder plate has a purging aperture for blowing the N₂ gas into the space, the purging aperture being connected to a N₂ source by a tube located in a cylindrical rotary shaft mounted to the holder plate. As can be seen from Figure 1 of Yamagata, the holder 102 does have the opening 103 formed therein. However, the opening 103

has solid sidewalls and passes all the way through the holder 102 such that a film can be formed on a surface of the substrate 101 exposed by the opening 103 when the substrate 101 is anodized. (See column 12, lines 7-19 and Figure 33). Therefore, it is apparent that the holder 102 does not have a purging aperture, or any aperture for that matter, that is able to blow gas into the space 103. Further, since Yamagata fails to disclose or suggest the purging aperture, it is apparent that Yamagata necessarily fails to disclose or suggest that the purging aperture is connected to a N₂ source by a tube located in a cylindrical rotary shaft mounted to the holder 102. As a result, claim 1 is patentable over Yamagata.

Kinoshita discloses a semiconductor processing apparatus including a vacuum chuck main body 101 adapted to hold a wafer 1. A suction surface of the main body 101 has a number of outer grooves 107 and inner grooves 108. The outer grooves 107 are connected to a vacuum pump 111 via vacuum evacuation holes 109, vacuum evacuation paths 110 and pipes 112. The inner grooves 108 are connected to a vacuum pump 115 via vacuum evacuation holes 113, vacuum evacuation paths 114 and pipes 116. By having the two separate suction sections, if suction is lost or reduced in the outer grooves 107 due to dust or damage to the suction surface or due to bending of the wafer 1, the main body 101 will still be able to hold the wafer 1 due to the suction provided by the inner grooves 108. (See column 21, line 55 – column 22, line 35 and Figure 11).

The rejection indicates that the vacuum evacuation holes 113 in the main body 101 correspond to the claimed purging aperture. However, claim 1 now recites that the purging aperture blows the N₂ gas into the space, and that the purging aperture is connected to a N₂ source by a tube located in a cylindrical rotary shaft mounted to the holder plate. Based on the above discussion of Kinoshita, it is apparent that the vacuum evacuation holes 113 remove air from the inner grooves 108 so as to suction the wafer 1 to the suction surface of the main body 101 and do not provide gas into the inner grooves 108. Further, the vacuum evacuation holes 113 are connected to the vacuum pump 115 so as to provide the suction to hold the wafer 1 to the suction surface of the main body 1 and are not connected to a N₂ source. Additionally, neither the vacuum evacuation paths 114, nor the pipes 116, which connect the vacuum evacuation holes 113 to the pump 115, are disclosed or suggested as being located in a cylindrical rotary shaft mounted to the main body 101. Instead, the vacuum evacuation paths 114 are located in the

main body 101 and the pipes 116 appear to be separate from all other elements of the apparatus. As a result, claim 1 is patentable over Kinoshita.

As for Watanabe, it is relied upon as disclosing a number of features of dependent claims 6-8. However, it is apparent that Watanabe also fails to disclose or suggest the holder plate having the purging aperture as recited in claim 1. Therefore, one of ordinary skill in the art would not have been motivated to modify or combine the references so as to obtain the invention as recited in amended claim 1.

New claims 14 and 19 are also patentable of Yamagata and Kinoshita, since claims 14 and 19 each recite, in part, a disc-shaped holder plate having a face to which an annular vacuum suction member is attached and a gas purging aperture provided in the disc-shaped holder plate for purging a gas into a hollow section defined by the annular vacuum suction member, the substrate and the disc-shaped holder plate. Yamagata and Kinoshita both fail to disclose or suggest these features of claims 14 and 19.

As discussed above, Yamagata discloses that the opening 103 passes all the way through the holder 102 such that the film can be formed on a surface of the substrate 101 exposed by the opening 103 when the substrate 101 is anodized. Therefore, since the opening 103 passes through the holder 102, it does not correspond to the claimed hollow section defined by the annular vacuum suction member, the substrate and the disc-shaped holder plate. Further, the sidewalls of the holder 102 forming the opening 103 are solid and no gas purging aperture is provided therein. As a result, claims 14 and 19 are patentable over Yamagata.

As for Kinoshita, it discloses that the suction surface of the main body 101 has the outer grooves 107 and the inner grooves 108 which are evacuated so as to hold the wafer 1 to the suction surface. However, it is apparent that neither the inner grooves 108, nor the outer grooves 107, correspond to the claimed hollow section because the hollow section is defined by the annular vacuum suction member, the substrate and the disc-shaped holder plate. Kinoshita fails to disclose or suggest an element corresponding to the claimed annular vacuum suction member. Further, Kinoshita only discloses the vacuum evacuation holes 109 and 113 in the main body 101 that evacuate air and fails to disclose or suggest the claimed gas purging aperture provided in the disc-shaped holder plate for purging a gas into the hollow section. As a result, claims 14 and 19 are patentable over Kinoshita.

Regarding Watanabe, it is relied upon as disclosing a number of features of dependent claims 6-8. However, it is apparent that Watanabe also fails to disclose or suggest the above-discussed features of claims 14 and 19. Therefore, one of ordinary skill in the art would not have been motivated to modify or combine the references so as to obtain the invention as recited in claims 14 and 19.

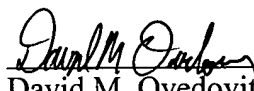
As for withdrawn claims 2-4 and 10-12, these claims all either directly or indirectly dependent from claim 1. Therefore, if claim 1 is deemed allowable, these claims should be given due consideration by the Examiner.

Because of the above-mentioned distinctions, it is believed clear that claims 1-8, 10-12 and 14-24 are allowable over the references relied upon in the rejections. Furthermore, it is submitted that the distinctions are such that a person having ordinary skill in the art at the time of invention would not have been motivated to make any combination of the references of record in such a manner as to result in, or otherwise render obvious, the present invention as recited in claims 1-8, 10-12 and 14-24. Therefore, it is submitted that claims 1-8, 10-12 and 14-24 are clearly allowable over the prior art of record.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance. The Examiner is invited to contact the undersigned by telephone if it is felt that there are issues remaining which must be resolved before allowance of the application.

Respectfully submitted,

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